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## **BIOLOGICAL ASSESSMENT AND EVALUATION**

### **Proposed Veterans Cemetery Fort Huachuca, Arizona**

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Prepared For:

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#### **I. PROJECT LOCATION**

The project area is located just south of the main gate and on the eastern boundary of Fort Huachuca, Arizona. The proposed Veterans Cemetery is located in Township 22 South, Range 20 East and in Sections 3 and 10.

#### **II. PROJECT DESCRIPTION**

The proposed Veterans Cemetery will occupy 130 acres of desert grassland. The cemetery will have a road system and other development normally associated with cemeteries. Due to the water-use mitigation measures planned by the city of Sierra Vista in conjunction with Arizona Department of Veterans Services (ADVS), water used at the cemetery at buildout would be offset by these proposed measures. Section 5 of the Environmental Assessment for the proposed cemetery describes the proposed mitigation measures. Therefore, there would be no net effect on the San Pedro River.

The effects of the cemetery project on listed wildlife species were based on a zeroed out water use. Thus, there would be no effect on those species associated with the San Pedro River, off-site of the project area.

### III. SPECIES IDENTIFICATION

The project site is located in Chihuahuan semidesert grassland. There is some evidence of past and present military traffic across the project area, but the site in general is a good example of semidesert grassland.

The most conspicuous perennials are *Prosopis glandulosa* (mesquite), *Eragrostis lehmanniana* (Lehman lovegrass), *Acacia greggii* (cat-claw acacia), *Opuntia phaeacantha* (prickly-pear), *Baccharis pteronioides* (Yerba-de-Pasmo), and *Yucca elata* (soap-tree yucca). Other common perennials and annual grass and weed are listed in the following Table 1.

The area is rich in grassland bird species (Table 2). Grasslands also provide foraging sites for hawks such as the Northern Harrier (*Circus cyaneus*) and American kestrel (*Falco sparverius*) which were observed during fieldwork. A few examples of the many other raptors that may potentially use grasslands to forage for birds or small mammals including the Swainson's hawk (*Buteo swainsoni*), red-tail hawk (*Buteo jamaicensis*), and wintering ferruginous hawk (*Buteo regalis*) (Cody, 1985). The peregrine falcon (*Falco peregrinus*), prairie falcon (*Falco mexicanus*), and merlin (*Falco columbarius*) may also forage in grassland habitat. Undisturbed grasslands hold more prey than ranchland or cultivated lands (Newton, 1979). Therefore, if the area or portions of it are maintained as natural grassland, habitat will be preserved for the passerines, small mammals, and hawks that use the area.

**Table 1. Plants found during fieldwork.**

<b>Family</b>	<b>Genus</b>	<b>species</b>	<b>Common Name</b>
Agavaceae	<i>Agave</i>	<i>palmeri</i>	Century Plant
Agavaceae	<i>Yucca</i>	<i>elata</i>	Soaptree
Amaranthaceae	<i>Amaranthus</i>	<i>hybridus</i>	Pigweed
Asteraceae	<i>Ambrosia</i>	<i>psilostachya</i>	Ragweed
Asteraceae	<i>Baccharis</i>	<i>pteronioides</i>	Yerba-de-Pasmo
Asteraceae	<i>Baccharis</i>	<i>sarothroides</i>	Desert Broom
Asteraceae	<i>Heterotheca</i>	<i>subaxillaris</i>	Telegraph Plant
Cactaceae	<i>Echinocereus</i>	<i>fendleri</i>	Hedgehog
Cactaceae	<i>Mammillaria</i>	<i>heyderi</i>	Pincushion Cactus
Cactaceae	<i>Opuntia</i>	<i>phaeacantha</i>	Prickley Pear
Cactaceae	<i>Opuntia</i>	<i>spinosior</i>	Cane Cholla
Cucubitaceae	<i>Apodanthera</i>	<i>undulata</i>	Melon Loco
Ephedraceae	<i>Ephedra</i>	<i>trifurca</i>	Long-leafed Joint-fir
Fabaceae	<i>Acacia</i>	<i>greggii</i>	Catclaw
Fabaceae	<i>Acacia</i>	<i>sp.</i>	
Fabaceae	<i>Prosopis</i>	<i>glandulosa</i>	Mesquite
Geraniaceae	<i>Erodium</i>	<i>cicutarium</i>	Filaree
Loranthaceae	<i>Phoradendron</i>	<i>californicum</i>	Mistletoe
Martyniaceae	<i>Proboscidea</i>	<i>parviflora</i>	Devils-claw
Poaceae	<i>Bothriochloa</i>	<i>barbinodis</i>	Beardgrass
Poaceae	<i>Bouteloua</i>	<i>gracilis</i>	Blue Grama
Poaceae	<i>Chloris</i>	<i>virgata</i>	Feather Fingergrass
Poaceae	<i>Eragrostis</i>	<i>lehmanniana</i>	Lehman Lovegrass
Poaceae	<i>Sorghum</i>	<i>halepense</i>	Johnson Grass
Polygonaceae	<i>Eriogonum</i>	<i>fasciculatum</i>	Buck brush
Solanaceae	<i>Solanum</i>	<i>elaeagnifolium</i>	Silverleaf Nightshade

**Table 2. Bird species found during fieldwork.**

<b>Common Name</b>	<b>Genus</b>	<b>species</b>
House Finch	<i>Carpodacus</i>	<i>mexicanus</i>
Baird's Sparrow	<i>Ammodramus</i>	<i>bairdii</i>
Lincoln's Sparrow	<i>Melospiza</i>	<i>lincolnii</i>
Brewer's Sparrow	<i>Spizella</i>	<i>breweri</i>
Savannah Sparrow	<i>Passerculus</i>	<i>sandwichensis</i>
Grasshopper Sparrow	<i>Ammodramus</i>	<i>savannarum</i>
Curve-billed Thrasher	<i>Toxostoma</i>	<i>curvirostre</i>
Loggerhead Shrike	<i>Lanius</i>	<i>ludovicianus</i>
Cactus Wren	<i>Campylorhynchus</i>	<i>brunneicapillus</i>
Common Raven	<i>Corvus</i>	<i>corax</i>
Turkey vulture	<i>Cathartes</i>	<i>aura</i>
Northern Harrier	<i>Circus</i>	<i>cyaneus</i>
American Kestrel	<i>Falco</i>	<i>sparverius</i>
Scaled Quail	<i>Callipepla</i>	<i>squamata</i>
Mourning Dove	<i>Zenaida</i>	<i>macroura</i>

#### **IV. SPECIES EVALUATION**

The biological survey was conducted December 6 and 7, 1999 by biologist Dr. Archie M. Dickey and wildlife biologist Janine Spencer. The entire project area was surveyed on foot using transects varying from 25-30m in width. Lists of sensitive species, including those threatened and endangered, with potential occurrence within the project area were obtained from the Arizona Game & Fish and the U.S. Fish & Wildlife Service.

### **T & E Species List**

Bald Eagle *Haliaeetus leucocephalus* Threatened

**Affected habitat description:** Bald eagles nests primarily along central Arizona rivers on cliffs, pinnacles, live trees and snags.

**Analysis of effects:** Habitats within the project area are not suitable for bald eagles. In addition, no effect is expected on riparian habitat outside the project area due to proposed mitigation of water use by ADVS in conjunction with the city of Sierra Vista.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect bald eagle or its habitat.

Beautiful (Yaqui) Shiner     *Cyprinella formosa*     Threatened

**Affected Habitat description:** This species is endemic to Rio Yaqui drainage.

**Analysis of effects:** The project is outside the range of the Shiner and there is no stream within the project. In addition, no effect is expected on riparian habitat outside the project area due to proposed mitigation of water use by ADVS in conjunction with the city of Sierra Vista.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect beautiful (Yaqui) shiner or its habitat.

Canelo Hills Ladies' Tresses     *Spiranthes delitescens*     Endangered

**Affected Habitat description:** This plant species occurs in finely grained, highly organic, saturated soils of cienegas in southern Arizona.

**Analysis of effects:** No cienega habitat occurs within the project area. In addition, no effect is expected on riparian habitat outside the project area due to proposed mitigation of water use by ADVS in conjunction with the city of Sierra Vista.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect Canelo hills ladies' tresses or its habitat.

Cochise pincushion Cactus     *Coryphantha robbinsorum*     Threatened

**Affected Habitat description:** This cactus occurs on gray limestone within the semidesert grassland with small shrubs, succulents, other cacti and grama grasses at an elevation of 4200 feet in Cochise County.

**Analysis of effects:** There are no limestone outcrops within the project area and no individuals of Cochise pincushion cactus were found.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect Cochise pincushion cactus or its habitat.

Gila Topminnow     *Poeciliopsis occidentalis*     Endangered

**Affected Habitat description:** Gila topminnow historically was one of the most abundant native fish in the Gila River Basin, but now occurs in 11 natural locations in southern Arizona.

**Analysis of effects:** There are no streams within the project area and this species is not known in Cochise county. In addition, no effect is expected on riparian habitat outside the project area due to proposed mitigation of water use by ADVS in conjunction with the city of Sierra Vista.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect Gila topminnow or its habitat.

Huachuca Water Umbel    *Lilaeopsis schaffneriana recurva*    Endangered

**Affected Habitat description:** This plant species grows as a semi-aquatic perennial in Cienegas and associated vegetation within Sonoran desertscrub, grasslands or oak woodland and conifer forest between 4000-6500 feet. Requires perennial water, gentle stream gradients and occurs in small to medium-sized drainage in Santa Cruz and Pima Counties.

**Analysis of effects:** No cienega habitat exists within the project area. In addition, no effect is expected on riparian habitat outside the project area due to proposed mitigation of water use by ADVS in conjunction with the city of Sierra Vista.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect Huachuca water umbel or its habitat.

Jaguar    *Panthera onca*    Endangered

**Affected Habitat description:** Jaguar historically were resident in southeastern Arizona, now only an occasional sighting of individuals from Mexico.

**Analysis of effects:** No individuals or signs were observed during fieldwork.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect jaguar or its habitat.

Jaguarundi    *Felis yagouaroundi cacomitli*    Endangered

**Affected Habitat description:** Jaguarundi historically were resident in southern and southeastern Arizona in Cochise, Pima and Santa Cruz counties but now there is only an occasional sighting from individuals from Mexico.

**Analysis of effects:** No individuals or signs were observed during fieldwork.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect Jaguarundi or its habitat.

Lesser Long-nosed Bat    *Leptonycteris curasoae yerbabuenae*    Endangered

**Affected habitat description:** This bat is a summer resident of central and southeastern Arizona, usually roosting in large numbers. Lesser long-nosed bats are nectar and pollen feeders on Agave species.

**Analysis of effects:** No suitable roosting sites occur within the project area, but a small cluster of *Agave palmeri* were found within the project area.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona may affect lesser long-nosed bat but is not likely to adversely affect lesser long-nosed bat or its habitat. The *Agave palmeri* cluster should be transplanted outside the project area or protected in place.

Mexican Spotted Owl    *Strix occidentalis lucida*    Threatened

**Affected habitat description:** Mexican spotted owl is found in steep, forested canyons of mountains and high mesas, principally in north-central and eastern Arizona.

**Analysis of effects:** No suitable habitat within the project site for this owl.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect Mexican spotted owl or its habitat.

New Mexico Ridge-nosed Rattlesnake    *Crotalus willardi obscurus*    Threatened

**Affected habitat description:** This subspecies occurs in extreme southwestern New Mexico and may occur in the Chiricahua Mountains.

**Analysis of effects:** Project area is outside the known range of this species.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect New Mexico ridge-nosed rattlesnake or its habitat.

Northern Aplomado Falcon    *Falco femoralis septentrionalis*    Endangered

**Affected Habitat description:** Northern aplomado falcon was historically found in southeastern Arizona in open yucca-mesquite grasslands. This species is now found in northern Chihuahua, Mexico.

**Analysis of effects:** Project area outside the present range of this species and no individuals were observed during this field study.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect northern aplomado falcon or its habitat.

Ocelot                                      *Felis pardalis*                                      Endangered

**Affected Habitat description:** Ocelots are no longer found in Arizona. They historically occurred in southeastern Arizona to central Arizona.

**Analysis of effects:** Project area outside the present range of this species and no individuals were observed during this field study.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect ocelot or its habitat.

Sonora Tiger Salamander      *Ambystoma tigrinum stebbinsi*                                      Endangered

**Affected Habitat description:** This salamander is known from scattered livestock ponds in San Rafael Valley between Huachuca and Patagonia mountains.

**Analysis of effects:** No suitable habitat occurs within the project area. In addition, no effect is expected on riparian habitat outside the project area due to proposed mitigation of water use by ADVS in conjunction with the city of Sierra Vista.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect Sonora tiger salamander or its habitat.



Southwestern Willow Flycatcher *Empidonax traillii extimus*      Endangered

**Affected habitat description:** Most southwestern willow flycatcher nests are located near standing water or saturated soils in dense riparian habitat.

**Analysis of effects:** Habitat within the project area is not suitable for Southwestern willow flycatcher. In addition, no effect is expected on riparian habitat outside the project area due to proposed mitigation of water use by ADVS in conjunction with the city of Sierra Vista.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect southwestern willow flycatcher or its habitat.

Yaqui Catfish      *Ictalurus pricei*      Threatened

**Affected habitat description:** This species is not found in Arizona at present. Some individuals have been reintroduced to the San Bernardino Creek area with little success.

**Analysis of effects:** No streams occur within the project area. In addition, no effect is expected on riparian habitat outside the project area due to proposed mitigation of water use by ADVS in conjunction with the city of Sierra Vista.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect Yaqui catfish or its habitat.

Yaqui Chub      *Gila purpurea*      Endangered

**Affected habitat description:** This species is restricted to now-occupied areas in the United States and Mexico including Leslie Creek, San Bernardino Creek, and several ponds on the Leslie Creek and San Bernardino NWR's and in West Turkey Creek associated with Willcox Playa drainage.

**Analysis of effects:** No streams occur within the project area. In addition, no effect is expected on riparian habitat outside the project area due to proposed mitigation of water use by ADVS in conjunction with the city of Sierra Vista.

**Determination of effect/recommended mitigation:** The Proposed Veterans Cemetery Fort Huachuca, Arizona will not affect Yaqui chub or its habitat.

### **Summary of Effects of the Proposed Project on TE&S Species**

The primary impact of the proposed Veterans Cemetery is a potential disturbance of about 130 acres of wildlife habitat. Actual disturbance could be far less depending on the use of on-site native vegetation vs. planting lawns. There is no foreseeable impact of the project on any individuals of any of the federally listed threatened or endangered species.

The *Agave palmeri* cluster should be transplanted outside the project area or protected in place. Also efforts should be made to transplant cacti and Yucca species when ever possible.

### **SIGNATURES**

#### **PREPARER:**

I prepared this Biological Assessment and Evaluation.

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**Archie M. Dickey, Ph.D.**  
**President**  
**Biozone, Inc.**

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**Date**

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